A Comparative Study on Factors Influencing Preventive Behavior of Dementia between Elders Attending Dementia Care Village Senior Centers and Elders Attending General Senior Centers in Korea

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Abstract

Background: We compared the dementia prevention behaviors between elders attending dementia care village senior citizen clubs and elders attending general senior citizen clubs. Also, this study indicated direction of the national responsibility system for dementia by identifying the factors influencing preventive behavior of dementia.

Methods: The subjects of this study were 125 elders attending dementia care village senior citizen clubs and elders attending general senior citizen clubs. Data were collected through personal interview using a questionnaire from October 8 to 22, 2019. Colllected data were analyzed with SPSS/WIN 22.0

Results: As a result of analyzing the factors affecting dementia prevention behaviors of elderly people aged 65 years or older, drinking (β =0 .21, p = 0.013), health status (β = 0.20, p = 0.025), interest in dementia (β = 0.18, p =0 .035), and self-efficacy (β = 0.22, p = 0.030) were influential factors, and the explanatory power was 18%.

Conclusion: The findings support the further development of interventions tailored to increase self-efficacy and that can increase interest in dementia in people with dementia.

Keywords: *Dementia, Senior centers, elderly, Primary prevention*

Introduction

In Korea, the elderly population aged 65 or over was reported as 13.8% of the total population in 2017, and is expected to enter 20% by 2026.Among them, the elderly with dementia account for 9.9% of the elderly, and are expected to increase rapidly to 10.0% in 2030 and 15.1% in 2050[(1)]. In addition, Dementia causes a significant strain on nationalbudgets; the worldwide economic burdenof caring for patients with dementia was roughly US$818billion in2015 and the cost of care is expected to double every 10 years[(2)]. Dementia is a representative disease with a high morbidity increase with age, and it is a disease that shows not only defective memory but also complex problems such as language, executive ability, judgment, behavioral problems, and difficulty of daily life[(3)].

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As the dementia prevalence and care costs of the elderly increased, demands for national intervention increased, and in September 2017, the government announced a plan to promote the "National Responsibility System for Dementia"[4]. The government emphasized that this is the duty of the state in the future. World Health Organization(WHO) has identified dementia as a "major health threat to humanity," and urged global efforts to solve it.As of 2019, Korea has established dementia care centers in 252 public health centers across the country to provide comprehensive support such as dementia customized consultation and early dementia screening.The dementia center, which was established before 2019, focused on early screening projects, but the effect was halved due to the increase in the number of simple medical examinations for the achievement of dementia related institutions[5].

Therefore, in order to reduce the social burden on dementia in the future, it is necessary to develop and implement a dementia prevention program that can be helpful to the elderly and those at high risk of dementia. In addition to the national responsibility system for dementia in 2019, a pilot project for dementia care villages is implemented.The dementia care villages aims to reduce therapist-centered therapeutic intervention in dementia management and to create an environment where elderly people can live safely with dementia by reflecting a subject-centered approach.Even if elderly have dementia, they can live with their local infrastructure so that they can live comfortably in the village where they lived.

Also, dementia care center assigns the dementia care village, and the dementia care village provides information on dementia and prevention education related to dementia to elderly[6]. Dementia, once developed, focuses on maintaining symptoms or preventing exacerbations through a long-term process rather than curing the disease. Therefore, it is important to prevent dementia in order to control the risk factors of dementia in advance and to reduce the incidence.In previous studies on dementia prevention behavior, the higher the knowledge about dementia and the positive the attitude about dementia, the higher the dementia prevention behavior[7]. Self-efficacy also had a positive effect on dementia prevention behavior[8]. In addition, self-efficacy of caregivers of people with dementia was significantly associated with health-related quality[9], and self-efficacy affected the quality of life by reducing depression and anxiety[10].

However, to our knowledge, few studies have examined the relationship between knowledge, attitudes, self-efficacy and dementia prevention behaviors in senior citizen clubs. The purpose of this study is to investigate the determinants of dementia prevention behaviors by applying and Knowledge, Attitude, Belief, and Practice model (KABP)[11].KABP is emphasizes that some desirable health behavior requires positive attitudes and beliefs by right knowledge.This study is to investigate the relationship between knowledge, attitudes, self-efficacy and dementia prevention behaviors and the elders attending dementia care village senior citizen clubs, and compare with elders attending general senior citizen clubs to see if the national dementia care system implemented by the state achieves value in the areas of health welfare and second-class citizen support.This is to find out whether the "national responsibility system for dementia in Korea" policy[4] implemented in the country implies the value that can prevent and manage the actual dementia and contribute to the public benefit and the development of the community.The aim of this study is to compare the dementia prevention behaviors between elders attending dementia care village senior citizen clubs and elders attending general senior citizen clubs, and to identify the factors influencing preventive behavior of dementia.

Methods

Design

This study was a descriptive correlation study to assess the level of dementia prevention behavior of elders attending dementia care village senior citizen clubs and elders attending general senior citizen clubs, and to identify the influencing factors of dementia prevention behavior.

Sampling and Conceptual framework

The subjects of this study were the elderly aged 65 years or older who used 4 designated dementia care villages located in S1, N, and S2 city in Gyeonggi-do and 4 general senior citizen clubs.The 125 participants in this study, excuding the 5 questionnaires were rejected

because there were many missing items.This study applies conceptually framework by KABP model and previous studies to identify the relationship between dementia prevention behavior and variables of elders attending dementia care village senior citizen clubs and elders attending general senior citizen clubs. Figure 1 shows the conceptually framework of this study, KABP model is composed of knowledge of dementia(knowledge), attitudes of dementia(attitude), self-efficacy(belief), and preventive behaviors of dementia(practice).

Figure 1. Conceptual framework of this study

Instruments

General characteristics of the elderly

The general characteristics of the subjects in this study were gender, age, marriage, education level, income, religion, housing environment and living arrangement , and level of interest in dementia. Also, alcohol, smoking, exercise, and health status were examined.

Knowledge of dementia

To investigate the level of dementia knowledge among the elderly, the tool developed by the Kim et al[12] was used. Dementia knowledge refers to the level of knowledge about the causes, symptoms, treatment, and prevention of dementia, and the tool consists of 16 questions, and 1 point if correct, 0 points if incorrect or not answered. The score ranges from 0 to 16, with higher scores indicating higher knowledge of dementia.

Attitude for dementia

Attitudes toward dementia was measured by the tool developed by Lee YH [7]. The questionnaire consists of a total of 15 questions, with a 4-point Likert scale, with a range of 15 to 60 points, with higher scores indicating a positive attitude toward dementia. Cronbach's α = 0.75 in Lee's study, and Cronbach's α = .72 in this study.

Self-efficacy

Self-efficacy was measured by the tool developed by Lee KY [13].It consists of a total of 8 questions and is on a 5-point Likert scale. The score ranges from 8 to 40 points. Higher scores indicate higher self-efficacy. In the study of Lee KY[13], the tool's Cronbach's α = .87, and in this study, Cronbach's α = .83.

Dementia prevention behavior

The dementia prevention behavior was measured by the tool developed by Lee YH et al[7]. Dementia prevention behavior consisted of 12 questions. The score ranges from 12-36 points on a 3-point Likert scale. Higher scores mean better dementia prevention. In Lee's[7] study, Cronbach's α = .75 and Cronbach's α = .75 in this study.

Data Collection

The general senior citizen clubs were selected with a recommendation from the social worker which the 3km neighborhood with similar geographical, environmental, and cultural characteristics to the dementia care village senior citizen clubs.The agreement to participate in the study stated the subject's anonymity and confidentiality, voluntary participation and withdrawal of consent, and personal information protection matters. This was orally explained to all study subjects and completed with a questionnaire with written consent.The questionnaire was completed with the help of researchers and

research assistants.The time required to complete the questionnaire for this study was about 10 minutes, and toothbrush sets or socks were rewarded to the participants who responded to the written consent and questionnaire.

Data Analysis

The data collected in this study were analyzed using the SPSS program 22.0 according to the purpose of the study.The general characteristics of the subjects were obtained from error, frequency, percentage, mean, and standard deviation. The differences between the elderly using the dementia care village senior citizen clubs and the elderly using the general senior citizen clubs were analyzed by independent t-test, χ^2 test, and one-way ANOVA. Post-test was analyzed by Scheffe test. The correlation between the measurement variables related to dementia prevention behavior of the elderly using the dementia care village senior citizen clubs and the elderly using the general senior citizen clubs was analyzed by Pearson's Correlation coefficient. Finally, multiple regression analysis was used to determine the determinants of dementia prevention behavior.

Results

Differences in the General Characteristics of the Subjects

Table 1 compares the general characteristics of the study subjects. There was no significant difference between the two groups in age, education level, monthly income, religion, living arrangement, smoking, and exercise.Comparison of the general characteristics of the elderly using the dementia care village and the elderly in the general senior citizen clubs, there was a significant difference in drinking ($\chi^2 = 9.01$, p =0 .003), health status (t = 2.39, p =0 .018), and interest in dementia (t = 3.32, p <.001)[Table 1].

Differences in demental knowledge, attitudes, self-efficacy, and dementia prevention behaviors between the of the Subjects

In this study, the dementia knowledge score of the elderly using the dementia care village senior citizen clubs was 11.30 out of 16 points, and 9.8 points for the elderly in the general senior citizen clubs. The dementia knowledge score was significantly higher among the elderly using the dementia care village senior citizen clubs (t = 3.33, p <.001).Attitudes toward dementia among the elderly using the dementia care village senior citizen clubs were 44.38 out of 60 points, and 41.33 for the elderly in the general senior citizen clubs. The attitude score for dementia was significantly higher in the elderly using the dementia care village senior citizen clubs. Self-efficacy (t = 4.65, p <.001) and dementia prevention behaviors (t = 2.26, p = 0.026) were also significantly higher in the elderly using the dementia care village senior citizen clubs than those in the general senior citizen clubs [Table 2].

Comparison of correlation betweendemental knowledge, attitudes, self-efficacy, and dementia prevention behaviors between the of the Subjects

Table 3 compares the correlation between dementia knowledge, attitude, self-efficacy, and dementia prevention behaviors of the elderly using the dementia care village senior citizen clubs and the elderly using the general senior citizen clubs. Dementia knowledge (r = 0.241, p = 0.038) and self-efficacy (r = 0.321, p = 0.008) were statistically significant variables related to dementia prevention behavior in the elderly using the dementia care villages senior citizen clubs. The level of dementia prevention behavior was higher in high score of dementia knowledge and self-efficacy. Self-efficacy (r=0.209, p=0.041) was found to have a

Table 1: General characteristics of the subjects (N=125)

Variable		Elderly using dementia care village senior citizen clubs (n=55)	Elderly using general senior citizen clubs (n=70)	χ2 or t	p
		n(%)	n(%)		
Age(years)	Mean±SD	81.13±6.13	82.09±6.34	-0.85	0.396

Cont... **Table 1: General characteristics of the subjects (N=125)**

Sex	Male	10(18.2)	10(14.3)	0.35	0.627
	Female	45(81.8)	60(85.7)		
Marriage	Married	16(29.1)	10(14.3)	4.09	0.059
	Bereavement	39(70.9)	60(85.7)		
Education level	Uneducated	24(44.4)	37(52.9)	1.26	0.534
	Elementary	23(42.6)	23(32.9)		
	≥ Middle	7(13.0)	10(14.3)		
Monthly income(₩10,000)	≤ 49	35(63.7)	32(47.8)	6.47	0.091
	50~99	17(30.9)	33(49.2)		
	≥100	3(4.4)	2(3.0)		
Religion	Yes	40(74.1)	41(58.6)	3.23	0.072
	No	14(25.9)	29(41.4)		
Living arrangement	Family	32(58.2)	36(51.4)	0.57	0.452
	Alone	23(41.8)	34(48.6)		
Alcohol	Yes	4(7.3)	20(28.6)	9.01	0.003
	No	51(92.7)	50(71.4)		
Smoking	Yes	1(1.8)	1(1.4)	0.03	0.863
	No	54(98.2)	69(98.6)		
Exercise	Yes	42(76.4)	51(73.9)	0.09	0.754
	No	13(23.6)	18(26.1)		
Health status	1-5(range)	3.33±0.88	2.91±1.04	2.39	0.018
Interest in dementia	1-5(range)	3.11±0.94	2.51±1.05	3.32	<.001

Statistically significant correlation with dementia prevention behavior in the elderly using general senior citizen clubs.

Factors influencing dementia prevention behaviors of the subjects

In this study, a hierarchical regression analysis was conducted to investigate the determinants of dementia prevention behavior [Table 4].First, variables of alcohol, health status, and interest in dementia, which showed significant difference in general characteristics, were analyzed by using independent variables. alcoholvariable was dummy.Next, the analysis was conducted with independent variables in order of knowledge of dementia, attitudeof dementia, and self-efficacy.The possible presence of auto-correlation andmulticollinerity for the regression model were assessed with the Durbin-Watson statistic(1.63), tolerance (.71~.99), and variance inflation factor (1.01~1.41), confirming that the basic requirements of regression analysis were satisfied.Hierarchical regression analysis showed that in Model I, drinking (β= 0.18, p = 0.035), health status (β=0 .28, p <.001), and interest in dementia (β=0.27, p=0.004) were significant determinants of dementia prevention behavior. The hierarchical regression model I was statistically significant (F=8.80, p<.001) and the explanatory power was 16%.In Model II, when dementia knowledge, attitudes, and self-efficacy were added, drinking (β= 0.21, p= 0.013), health status (β= 0.20, p = 0.025), and interest in dementia (β=0. 18, p =0 .035), and self-efficacy (β= 0.22, p = 0.030) were significant factors affecting dementia prevention behavior. The model II was statistically significant (F = 5.53, p <.001) and the explanatory power was 18%.

Table 2: Differences of measuring variable between the elderly attending the dementia care village senior citizen clubs and the elderly attending the general senior citizen clubs (N=125)

Variable	Range	Elderly attending dementia care village senior citizen clubs (n=55) M±SD	Elderly attendinggeneral senior citizen clubs (n=70) M±SD	t	p
Knowledge of dementia	0~16	11.30±2.52	9.81±2.44	3.33	<.001
Attitude of dementia	15~60	44.38±5.11	41.33±5.95	3.02	0.003
Self-efficacy	8~40	32.75±5.70	27.85±5.931	4.65	<.001
Preventive behavior of dementia	12~36	30.69±3.22	29.34±3.37	2.26	0.026

Table 3. Correlation among knowledge of dementia, attitude of dementia, self-efficacy, and preventive behavior of dementia (N=125)

Variable	Knowledge of dementia r(p)	Attitude of dementia r(p)	Self-efficacy r(p)	Preventive behavior of dementia r(p)
Elderly attending dementia care village senior citizen clubs (n=55)				
Knowledge of dementia	1			
Attitude of dementia	0.186(0.087)	1		
Self-efficacy	0.236(0.041)	-0.032(0.408)	1	
Preventive behavior of dementia	0.241(0.038)	0.030(0.415)	0.321(0.008)	1
Elderly attendinggeneral senior citizen clubs(n=70)				
Knowledge of dementia	1			
Attitude of dementia	0.235(0.025)	1		
Self-efficacy	0.040(0.372)	0.3450(0.002)	1	
Preventive behavior of dementia	0.010(0.497)	0.114(0.173)	0.209(0.041)	1

Table 4. Hierarchical regression analysis for preventive behavior of dementia (N=125)

Variables	Model I			Model II		
	B	S.E	β(p)	B	S.E	β(p)
(Constant)	22.06	1.66		20.65	2.71	
Alcohol	1.51	0.71	0.18 (0.035)	1.82	0.72	0.21 (0.013)
Health status	0.95	0.28	0.28(<.001)	0.67	0.30	0.20 (0.025)
Interest indementia	0.79	0.27	0.27 (0.004)	0.58	0.31	0.18 (0.035)
Knowledge of dementia				-0.10	0.11	-0.08 (0.323)
Attitude of dementia				0.01	0.06	0.01 (0.989)
Self-efficacy				0.12	0.05	0.22 (0.030)
R^2		0.18			0.22	
Adjusted R^2		0.16			0.18	
F (*p*)	8.80(<.001)			5.53(<.001)		

Discussion

This study compares the degree of dementia prevention behavior between the elderly attending dementia care village senior citizen clubs and the elderly attending general senior citizen clubs, and evaluates the effect of social value of dementia prevention program implemented as a national dementia prevention program. Attempts have been made to provide basic data for the development and activation of future dementia prevention programs.

In the study results, first, the elderly using dementia care village senior citizen clubs were less drink alcohol, better health status, and higher level of interest in dementia than the elderly using general senior citizen clubs. This suggests that the elderly using dementia care village senior citizen clubs each week have a customized preventive program for dementia and have been educated about the relationship between dementia and alcohol in dementia prevention.In addition, education on the importance of health care seems to have made efforts for health care on its own[13].In addition, as they were regularly exposed to and participated in dementia prevention education, their interest in dementia increased more than the elderly who using general senior citizen clubs.However, most of the studies on dementia knowledge education programs were developed for health professionals[14] and caregivers[15].In the future, a strategy for developing and expanding knowledge education programs for dementia fer the elderly living in the community is needed.

Second, the level of dementia knowledge, dementia attitude, self-efficacy, and dementia prevention behavior were more positive or higher in the elderly using dementia care village senior citizen clubs than in the elderly using general senior citizen clubs, significantly. The results of the training which is about symptom of dementia, difference between amnesia and dementia, and risk factors of dementia for 2 times a week for 3 weeks, total 6 times, can be interpreted in the same context that the experimental group who received dementia education increased the knowledge of dementia and positive attitude toward dementia compared to the control group[16].

Third, the dementia prevention behaviors of the elderly using dementia care village senior citizen clubs were significantly correlated between the knowledge of dementia, self-efficacy, and the dementia prevention behaviors.The results of this study are supported by the findings that suggest that more educational programs and campaigns are needed to improve knowledge about dementia[17]. Also, the elderly using general senior citizen clubs were significantly correlated between the self-efficacy and dementia prevention behavior.As a result of a study by Tonga et al [18], an increase in self-efficacy can have a positive effect on the quality of life by reducing depression and anxiety in dementia patients. Therefore, in order to increase dementia prevention behaviors, it is necessary to provide programs that can give attention to health status and dementia, and to improve dementia knowledge.

Fourth, as a result of analyzing the determinants of dementia prevention behavior in the elderly, drinking ($\beta = 0.21$, $p = 0.013$), health status ($\beta = 0.20$, $p = 0.025$), interest in dementia ($\beta=0.18$, $p=0.035$), and self-efficacy ($\beta=0.22$, $p=0.030$) were found to have an effect.In this study, self-efficacy was found to have the greatest influence on dementia prevention behavior. Self-efficacy might be related to other constructs from positive psychology, such as hope, resilience, optimism, and self-esteem[10].It is also a powerful factor in predicting changes in motivation and behavior for health promotion[18].One study reported that self-efficacy, optimism, and self-esteem were positively related to quality of life and dementia prevention behavior in patients with mild dementia in a community group[19]. Similarly, another study reporeted that result with the previous study result which the significant effect of self-efficacy on dementia prevention behavior among middle-aged women[7]. In other words, the interest in dementia in this study may mean that the attitude toward dementia to understand dementia is changing positively, and the self-confidence of dementia prevention behavior influences on dementia prevention behavior. In the "National Responsibility System for Dementia" in Korea, the dementia care village is a project that "improves awareness of dementia through education and participation of local residents, and induces the elderly to help each other"[20]. It is thought that the elderly's negative perception of dementia decreased and their sense of self-efficacy increased through periodic education in the Senior Citizens of the Dementia Safe Village.

Therefore, it is necessary to include linguistic persuasion, accomplishment, and surrogate experience, which are the elements that promote self-efficacy, which are shown in the theory of self-efficacy to consist of dementia prevention program. In Korea, although it has been less than a year since the start of dementia care village project, the dementia prevention behavior of the elderly who use dementia care village was higher than that of the elderly who use general senior citizen clubs. It explains the importance of the national responsibility system. In the future, it is necessary to make efforts to continue education and programs related to dementia prevention behaviors of the elderly, not one-time.

Conflict of Interest: Nil

Source of Funding: No funding this is a study

Ethical Consideration: The study was approved by the Institutional Review Board (IRB No EU19-09) of the researchers' university. Researchers explained researcher's information, research purpose, infermed consent.

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